Group Tasks

1) **Critical Events (e.g., object on road)**

2) **Sequenced Events (e.g., target detection tasks).**

3) **Maneuvers and tasks (e.g., turns, lane changes and car following).**

Questions

A. **What common scenarios should we have?**

B. **How should these be described?**

Group 1: Critical Events

Participants

- **Peter Burns, Transport Canada**
- **Blair Nonnecke, University of Guelph**
- **Gary Rupp, Ford**
- **Louis Tijerina, Ford**
- **Judy Gardner, Motorola**

Critical Events Discussion

The utility of critical events is questioned. There are many limitations to using critical events:

- **variability of response data (e.g., brake, steer, crash)**
- **limited quantity of unstable data (missed events)**
- **learning and repeatability (within S's design difficult)**
- **difficulty in creating surprise,**
- **problem of high drama,**
- **re-usability,**
- **construct validity (crash dilemma).**

Is a standard needed for individual scenarios or all scenarios?

<u>Definition</u> – An unexpected stimulus that requires a measurable driver maneuver.

Critical Scenario Stimuli

Objects

- **Moving objects**
- **Stationary objects**
- **Lead vehicle stopped (stationary), decelerating (engine or brake), slow moving,**
- **Obstacle on road (animate or not)**
- **Vehicle incursion (merge, crossing, oncoming)**
- **Blindspot vehicle**
- **Following vehicle hazard**

Road (environment, black ice, pot hole, fog)

b) How should these be described?

Measures:

- Detection/ recognition/ preparation/ execution
- Pedal release
- Brakes
- Visual behaviour

Characteristics/attributes of critical events:

- Code (text/ use cases (programming) / video clips/ sketches/ story board/
- Triggers
- The scene
- Object's actual behaviour (path, speed, duration)
- Object's perceived behaviour
- Behaviour of other relevant objects
- Subject vehicle (influenced/ managed/ guided/ pushed …)
- Interaction between subject and object
- Distance/ separation – longitudinal, sight, time to contact, decision time.
- Response possibilities (avoidance, brake, steer)
- Dealing with crashes, or missing data.
- Physical characteristics (object size, colour, contrast…).
- Creating surprise - temporal uncertainty, spatial uncertainty, tricks/ foils..

Group 2: Sequenced Events

Participants

- **Steffan Mattes, DaimlerChrylser**
- **Barry Kantowitz, UMTRI**
- **John Shutko, Ford**
- **Tom Ranney, TRC**
- **Chris Monk, NHTSA**

Sequenced Events Discussion

General scenario: leading vehicle to keep speed constant

Type of event

Artificial, always same location (red square in center position)

Artificial, random location

for artifical: on screen vs. in car (LED, head mounted)

Real, not associated with driving (irrelevant traffic sign)

Real, meaningful for primary task (vehicle ahead braking; sign indicates lane change)

visual vs. auditory

how fatiguing is the additional task (especially for ternary tasks)

Frequency of events

low vs. high, regular vs. random

Type of response

Additional response (keypress)

well learned response (braking, steering for collision avoidance)

artificial response due to instruction^

Type of analysis

RT, errors, driving performance

note: control gaze direction

Group 3: Maneuvers and Driving

Participants

- **Hideka Hada, Mitsubishi Motors**
- **Yiannis Papelis, University of Iowa, NADS**
- **Wade Allen, Systems Tech**
- **Dave Hoffmeister, Ford**
- **Brian Repa, GM**
- **Ergan Uc, University of Iowa**
- **S. Espie, INRETS**
- **Johan Janson Olstrom, Linkoping University**
- **Hamish Jamson, Leeds University**

Maneuvers Discussion

- Continuous tasks would give a better measure of performance that single maneuvers or sequenced events.

- Steering with wind gusts, curving road, car following with variable speed profile. Common analytic aspects are the behaviour of the stimulus.

- Common Stimulus-Response measurement is FFT technique for measuring S-R.

- They did not discuss discrete tasks – prob – you can miss it like events and miss data or must repeat it.

- Group suggests continuous measures.

- Subject incentives were also discussed – these and instructions can influence behaviours significantly. Doing the best you can is not enough. Basic psychology literature says a lot on incentives and decision making.